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COVER: LCDR Paul Lucha, MC, performs minor scalp surgery at a field hospital during Exercise Purple Star, Camp Lejeune, NC. Stories on pages 1 and 4. Photo by SGT Lance Bacon, USMC, Camp Lejeune Public Affairs.

Purple Star '96

Combined Joint Task Force Exercise '96, or as it was commonly called, Purple Star '96, was the largest combined joint "invasion" since World War II. The exercise involved more than 10,000 British troops teamed with 38,000 U.S. troops. For 2nd Medical Battalion, 2nd Force Service Support Group, Camp Lejeune, NC, Purple Star was the opportunity to train and operate on an enormous scale. Tragically, this training became reality in the early hours of Purple Star.

The 2nd Medical Battalion employed all three of its surgical companies in support of Purple Star '96. Charlie

Company was set up prior to D-Day at nearby Camp Davis. While Alpha Company was assigned to 2nd FSSG(FWD) and would be introduced to the "conflict" as part of the landing force, Bravo Company provided the Shock Trauma Platoon (STP) stationed at Bogue Field. Medical assets had to be widely dispersed due to the large number of personnel, vehicles, aircraft, and warfighting evolutions which would be involved in the exercise.

The medical augmentation platform mobilization system was put to a major test when 12 east coast medical facilities were tasked with providing nearly 200 Medical

LT Thomas McCoy, MSC



Mass casualty drill



Surgeon performs scalp surgery during CJTFEX-96.

Augmentation Personnel (MAPS). Alpha and Charlie Companies each received approximately 100 personnel in addition to their normal garrison strengths. The MAPS were processed through 2nd Medical Battalion and assigned to their functional areas to begin preparation and training in support of the exercise. Purple Star was to be an all-hands evolution that emphasized cooperation and teamwork.

With these medical assets available, 2nd Medical Battalion was providing support to a massive Combat Service Support Element, a Ground Combat Element, and an Air Combat Element. The 2nd Medical Battalion had three missions to accomplish during the exercise: provide host nation medical support, conduct real world scheduled surgical operations, and to train augmentees.

Unfortunately, tragedy struck during the early morning hours of D-Day when two helicopters conducting night operations over Camp Lejeune collided in midair. LT Howard Aupke, Charlie Company's commanding officer, immediately responded by dispatching three ambulances to the crash site to recover the casualties and fatalities. Nineteen additional medical personnel were dispatched to the crash site to recover, receive, and transport the 2 casualties and 14 fatalities to Naval Hospital Camp Lejeune. CAPT Carl Hooton, Commanding

Officer, 2nd Medical Battalion, ordered an additional M-997 field ambulance from Bogue Field to assist in the recovery.

Even with the tragedy fresh in everyone's mind, the exercise and the Battalion's mission continued. Host nation medical support was a critical part of the exercise. Training and preparing physicians, nurses, and hospital corpsmen for trauma and sick call took on a new meaning in light of the midair collision. The Battalion and Company Commanders emphasized this point when news of the accident was passed.

The austere surroundings had little impact on the capability of the surgical companies which had the same basic capabilities as a regular hospital. Charlie Company was composed of a surgical shock trauma/triage unit, two operating rooms, three wards, one laboratory, one X-ray, one dental unit, one pharmacy, one CSSR, one evacuation section, one morgue, one administrative section, and 18 berthing tents. Alpha Company was similarly configured and co-located with a British light dressing station, an armored unit, and a helicopter squadron. This offered a unique opportunity to work and train with our British counterparts.

Amid mass casualty drills and other training, over 60 U.S. and U.K. troops were treated and released during the



British dressing station

exercise. Since functional areas were staffed “around-the-clock,” several nonemergency patients remained overnight on wards during this evolution. In most cases, patients were either treated and returned to duty or evacuated to the Naval Hospital for further treatment. Injuries treated included heat exhaustion, kidney stones, numerous fractures, insect bites and stings, corneal abrasions, appendicitis, and hazardous chemical exposures.

In addition to host nation medical support, nine minor surgical procedures were scheduled and completed over a 2-day period during Purple Star '96. The patients were active duty volunteers who were previously screened by the attending surgeon. Under the supervision of the attending surgeon, MAP surgeons performed the minor surgeries. The patients also received preoperative and postoperative care on the wards. LCDR David Sechler, Surgeon, 2nd Medical Battalion, stated, “These aren’t exactly major gunshot wound cases, but everything out here is exactly what we’d be using in combat as far as equipment and personnel. That’s a big part of the reason why we do these exercises, to kind of familiarize our-

selves with the equipment and surroundings we’d be using in a combat situation.”

Applying medical treatment to mass casualties along with the experience received from the surgeries proved to be an invaluable learning experience for all of 2nd Medical Battalion and the medical augmentees. CPL Mark Spiller, USMC, Headquarters & Service Company, 2nd Medical Battalion, stated, “Never having been stationed with the Navy before, I never knew this aspect of medical. This exercise has made me proud to learn more about Navy medicine.” Indeed, there is a very special bond between FMF Medical and Marines that has a long, rich history. PFC Mario Victorez Wilcox, USMC, Headquarters & Service Company, 2nd Medical Battalion, states, “I feel the Marine Corps and Navy medical functions together as one; we’re on the same sheet of music.” PFC Wilcox feels this exercise has matured him beyond a point of expectation, a sentiment conveyed by all involved. □

—Story by LTJG Lynn C. Martin, MSC, Battalion Adjutant, 2nd Medical Battalion, 2nd FSSG, Camp Lejeune, NC.

Critical Incident Stress Debriefing

Extensive television coverage of the bombing of the Alfred P. Murrah federal building in Oklahoma City literally brought the mass casualty experience into every living room in the United States. For days, the American public agonized with Search and Rescue workers, and relatives of the victims. How did people on scene day after day survive emotionally? They coped with the help of Critical Incident Stress Debriefing (CISD) teams. CISD teams work with individuals in mass casualty situations to decrease the impact of a traumatic event, and restore people to normal functions as soon as possible. The following is an account of how a CISD team made a difference in the lives of 43 marines and sailors at Camp Lejeune, NC.

CJTFFEX-96 had been in the planning stages for months, and literally hundreds of battalion man-hours had gone into careful preparation for an unprecedented evolution. This Joint Task Force (JTF) event was the culmination of numerous military exercises involving multinational forces over the last 5 years. CJTFFEX-96 linked the United Kingdom Exercise, Purple Star, and two USACOM Joint Training Exercises, Market Square and JTFEX-96-2 (Fleetex/Socex). There were 53,000 participants, which

included American and British marines, sailors, and soldiers.

The 2nd Medical Battalion had been tasked with providing real world medical care to JTF personnel. This translated into treating real casualties in the field under tactical conditions and providing around-the-clock sick call to both American and British troops during CJTFFEX-96. This was to be done at three primary locations: Camp Davis, TLZ Goose, and Bogue Field. The battalion was augmented by 188 health care professionals from 14 commands and supported air and ground forces in the form of echelon I and II health services support. This provided two fully staffed surgical companies and a Shock Trauma Platoon (STP). These augmentees, comprised of corpsmen, dental techs, doctors, dentists, nurses, and Medical Service Corps officers, filled out the elements of the battalion to wartime strength, and provided the personnel to accomplish the mission. Though many were in the field environment for the first time, they expeditiously responded to 83 real world medical cases.

The 2nd Medical Battalion Command Element and Charlie Company, with 96 augmentees, departed Camp Lejeune on Thursday morning, 9 May, for Camp Davis, where Charlie Com-

pany had set up an STP. It was a day of getting settled in. Thursday night, however, would be the only good night's sleep that many would get for the duration of Purple Star. About 0230 Friday, two helicopters, a CH-46 Sea Knight and a Cobra, collided over TLZ Sandpiper, a tactical landing zone, tragically taking the lives of 12 marines, an Army soldier, and a Navy corpsman. At 0345, 18 corpsmen, dental techs, and physicians were ordered out with three ambulances to provide assistance to the rescue and recovery effort. Three corpsmen from Bravo Company, located at Bogue Field, were also dispatched.

At approximately 0630, the commanding officer of 2nd Medical Battalion, CAPT C.J. Hooton, MSC, requested that provisions be made to speak to the response teams when they returned. He knew from past experience that time spent at a crash site could be arduous and grueling, and would take its toll emotionally. This was the first time many of these individuals had been exposed to this type of situation. At 0900, 19 additional personnel left to augment the team already at TLZ Sandpiper.

Among the 96 augmentees were a psychiatrist, a psychologist, and three neuropsychiatric technicians attached to Charlie Company. All the ingredi-

LCDR Diana Meehan, CHC



ents needed to create a CISD team were present. A meeting was set for 0900. The key players were LT Nancy Kim, LCDR Harley Smoot, LCDR Diana Meehan, LT Tim Bohlman, HM2 Norman Myrick, HM2 Mark Sprague, HM3 Robert Adam, and HM3 James Rhodes. LT Kim, a psychologist attached to Naval Hospital Portsmouth, VA, had been unsure what materials would be most useful

to her in the field. She would later say that she felt compelled to pack one book in particular in her seabag—*Critical Incident Stress Debriefing* by Jeffrey T. Mitchell, Ph.D., and George S. Everly, Ph.D. From it, she outlined a well-established CISD procedure that would be followed in the days ahead.

A plan quickly came together. The physical needs of the marines and

Mass casualty evacuation

sailors were addressed first. They were exhausted and would need to eat, shower, and sleep. Several had been up for 36 hours, and emotions were running high. It was also noted that a defusing would need to take place first in order to ease a potentially explosive emotional situation by offering support and normalizing uncomfortable thoughts and feelings. The possibility of offering a debriefing the following day was also discussed. This would allow people to deal with emotions if the defusing process did not provide closure. The Charlie Company commander informed us that the ambulance crew would return around 1500.

The mood of the response teams was somber when they finally returned to Camp Davis. The carnage they had witnessed firsthand hit them hard. Thirty-seven marines and sailors were directed to the chow hall, where the initial defusing was held. Members of the CISD team introduced themselves and briefly explained why everyone had been asked to meet with us. They were told that this was neither a psychotherapy session nor an investigation, but an opportunity to discover that what they were feeling as a result of this traumatic experience was *normal*. The initial session lasted about 30 minutes.

On Saturday morning, the CISD team members met to evaluate the defusing and to flesh out the next step of the plan. It was obvious that one more meeting was imperative. The goal of a defusing is to explore *briefly* the events as they occurred and to normalize reactions. However, most of the participants in the group wanted

LCDR Michael Brantley, NC



Surgeon preparing for surgery during Purple Star.

to talk in great detail on a feeling level. Many expressed that when they arrived at TLZ Sandpiper, they were in no way emotionally prepared for what they saw or experienced. It seemed unreal. As many helped to recover victims from the wreckage, they began to personalize the experience, coming face-to-face with their own mortality. The CISD team agreed that a group of 43 individuals in various stages of grief could not be managed effectively. A decision was made to split the team and the group into two sections in order to accommodate everyone. The first section was headed by LT Kim and Chaplain Bohlman. The second section was led by LCDR Smoot, a psychiatrist from Camp Lejeune, and the 2nd Medical Battalion chaplain. The three psych techs and a general duty corpsman, who had received CISD training at Portsmouth Naval Hospital in 1994, functioned as support personnel.

The debriefing was more structured. The goal, as dictated by experts, Dr. Mitchell and Dr. Everly, was to explore emotional issues. The day before, the 2nd Medical Battalion chaplain had directed reserve Chaplain Deborah Jetter, who was stationed with the STP at Bogue Field, to hold a defusing with the three corpsmen who had been dispatched to the crash site. During the conversation, it was learned that the wing chaplain at Bogue Field, LCDR Mike Franklin, also had marines who participated in search and recovery efforts. Therefore, the ambulance team from Bogue Field and the three marines from Air Traffic Air Control, MACS 6, of MAG 28, 2 MAW were invited to attend the debriefing. In support of their marines and sailors, the two chaplains were allowed to sit in.

These are the seven phases of the procedure followed:

(1) Introduction Phase. Each team member introduced themselves again and explained guidelines. Individuals were reminded that this was no investigation, that confidentiality would be enforced, and that the primary goal was to speed up their recovery as quickly as possible.

(2) Fact Phase. The group as a whole was then encouraged to talk about the facts only. Participants were positioned in a circle, and going clockwise, leaders asked each person to share who they were, what their role had been at the crash site, and what happened from their perspective. Experience shows that people who talk about traumatic events recover more quickly. Each person, however, was allowed to go at his/her own pace, so there was no pressure to share. The levels of involvement for search and recovery teams at TLZ Sandpiper varied. Some helped retrieve bodies from the wreckage; others made sure that everyone got drinking water regularly. Still others had been involved in the rescue of the two surviving

pilots. Each person had an important role to play, and by putting all the factual pieces of the incident together, the big picture became more apparent. Once everyone understood that they were experiencing the same feelings and thoughts, they gained strength from each other.

(3) Thought Phase. Individuals were asked what their first thoughts were once they came off "auto pilot." While in an operational mode, they had neatly tucked their feelings away in an imaginary box to be dealt with at a later time, hitting the auto pilot switch. Emotions were dealt with, but the team made sure that emotional content did not become too intense. A few individuals experienced symptoms after returning to Camp Davis, i.e., smells and sounds from the crash site. Helicopters flying overhead made some anxious and fearful. The CISD team was able to assure everyone that what they were experiencing was a normal reaction to an abnormal situation.

(4) Reaction Phase. Everyone was asked to share what they felt was the worst thing about the situation for



The CISD team in the field



Medical augmentees train for NBC warfare.

them personally, and what part of the event bothered them the most. Participants were allowed to answer randomly this time. None of them could stop thinking about the grieving families. Some found themselves in a spiritual dilemma, questioning God, and how He could have allowed this to happen to those so young and full of promise. Others could not erase the graphic picture of the crash site from memory. A few came to grips with the danger that is inherent in all training exercises.

(5) Symptom Phase. The discussion focused on physical/emotional/cognitive symptoms individuals might have experienced at the scene, like trembling hands, anger, confusion. It also focused on any symptoms individuals might have had since their return to the camp. Several of the participants confirmed that helos flying overhead made them anxious and nervous. Some could not erase smells and sounds from the crash site. Others had trouble sleeping and concentrating.

(6) Teaching Phase. This provided an opportunity to reemphasize that any symptoms they were experiencing were normal and could return at a later date. Stress techniques such

as resting, talking to others, talking to their supervisors, etc., were encouraged. Participants were asked to share the one thing that gave them hope. The fact that two pilots survived and were rescued was a significant and positive factor.

(7) Reentry Phase. The CISD team summarized the session and then offered words of encouragement and appreciation to those who had gathered, addressing any final questions and concerns to bring about a sense of closure.

This was only the beginning of the healing process. The CISD team had been successful in encouraging people to talk about their feelings, but only the tip of the iceberg had been uncovered. It is not uncommon for people who are involved in mass casualty incidents to develop post-traumatic stress disorder symptoms at a later date. For the remainder of the field exercise, a number of individuals spoke one-on-one with team members. By the end of the operation, the team felt confident that everyone in the group was prepared to seek additional help, and knew where to go to get it, if needed.

A CISD approach is holistic. The psychiatrists, psychologists, and

psych techs touched upon the emotional aspects of the incident, while the chaplains focused on the spiritual impact of this tragedy. The present medical battalion organization makes superb provision for the crucial personnel and expertise needed to deal with mass casualty incidents. Medical battalion has the capability of not only caring for the wounded, but also for the caregiver, who can become emotionally debilitated when subjected to intense emotional stress. The Christian tradition teaches that we are made in the image of God, who is three persons in one. Taking that concept a step further, a human being is like a three-legged stool. Each leg represents one part of his/her God-given makeup, i.e., physical, emotional, and spiritual . . . three-in-one. If one of those legs is broken, the stool can no longer stand on its own. When a person has been mentally shattered, a medical battalion with a CISD team can repair all three legs, so that the stool is as good as new.

In Psalm 30:5, David writes, “. . . weeping may remain for a night, but rejoicing comes in the morning.” Grief is overcome when an individual processes through it. Once those dark thoughts and feelings are brought out in the open, the night can no longer frighten us, and a new day brings a new beginning. Rest assured that medical battalion has the very best technical and professional expertise available to provide first-rate medical, psychological, and pastoral care to our marines, sailors, and allies, in any environment, and under any circumstances. □

—Story by LCDR Diana L. Meehan, CHC, Chaplain, 2nd Medical Battalion, Camp Lejeune, NC.

CBIRF Medical Element Tests New Equipment and Techniques



The Chemical/Biological Incident Response Force's (CBIRF) medical element introduced and field-tested two pieces of equipment that could put them on the forefront of treating chemical and biological contamination. Upon taking position at the CBIRF's forward deployed site in the Olympic Ring while supporting Joint Task Force Olympics, element members first established use of the Medicam—a piece of equipment that looks like a set of sunglasses but offers the unit a whole new level of sight.

The gear is worn outside a medical officer's gas mask. As he moves through an incident site or treats someone affected by a chemical or biological agent, a small camera fixed to the glasses sends the image back to the element commander, CDR Laurie Balagurchik, who sits in a MK 145 High Mobility, Multipurposed Wheeled Vehicle. Additionally, a microphone and head-

LT Michael Picio displays the proper wear of the Medicam.



CDR Laurie Balagurchik, CBIRF medical element commander, and LCOL Edward Eitzen, chief of operational medicine, Fort Detrick, MD, talk with chemical and biological experts across the country and with LT Michael Picio, CBIRF doctor, who is wearing the Medicam in an "affected" site.

set allows the two to converse, and a small adjustable screen inside the glasses allows the on-scene doctor to see who he is talking to. Through use of satellite communications, that same picture and conversation can also be shown to and include experts worldwide, resulting in a level of medical readiness Balagurchik calls "astounding." "(The Medicam) will, in essence, put the experts at the site and allow them to aid in treating casualties, especially those who show unique symptoms that aren't easily identifiable," she said.

The element was restricted but to a small area to test the gear, this due to its being on-call for any actual incident that may have occurred at the Centennial Olympic Games. The result of their efforts was as clear as the images sent by the tiny camera, however, as LT Michael Picio tended to "wounded" individuals inside the unit's quarters while Balagurchik and a host of experts from across the country watched



While teleconferencing with experts across the country LT Michael Picio treats HM2 Patrick Durkee, who is a "casualty" of a chemical agent.

and discussed the events with him as they unfolded.

"The Medicam unit is lightweight and easy to use," Picio said. "There is a fiberoptic camera mounted near my left eye and a small video screen mounted below my right eye, but neither restrict my vision. The whole array sort of reminds one of the "Terminator" movies, so much in fact that I'm now called "Robo-Doc" and "Buzz Lightyear" by the guys in the unit."

The tests did unveil three concerns for the medical staff. First was the limited range of the antenna fixed to

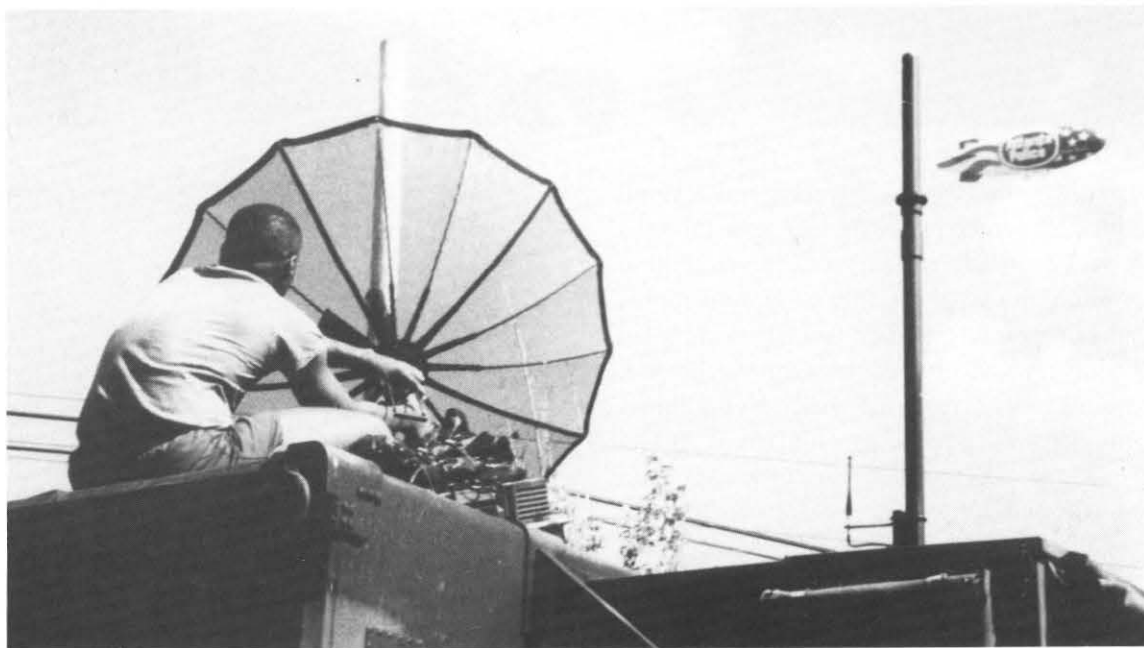
"The Medicam definitely has a place in the CBIRF," she said. "There are a few minor things we need to consider, but nothing which would prevent this gear from enhancing our ability to treat contaminated casualties if we were called upon."

Later in the week, the element tested their second piece of new gear as they went on-line for the first time with the Electronic Reachback Advisory Group, eight nationally and internationally recognized civilian experts in science and medicine, who are experienced in chemical and biological matters and disaster response.

cal Research Institute of Chemical Defense, and six fellow medical officers who were trained in the same course as well as having attended Contaminated Casualty Decontamination courses and becoming Nuclear, Biological and Chemical (NBC)-qualified by the U.S. Marine Corps Forces, Atlantic, NBC School.

"We have an outstanding medical staff which is competent to handle nearly any case we encounter, but we "are not experts in recognizing and treating the effects of chemical and biological agents. The medical field is too broad for one person to know

CPL Robert Lewis establishes satellite communications to make worldwide teleconferencing possible for medical personnel using the Medicam.



the Medicam. Second was the occasional difficulty in understanding what the doctor was saying, since he was speaking through a gas mask into a small microphone. Third was the question of whether or not the gear could be decontaminated after use, as it is affixed outside the doctor's protective mask.

Despite the concerns, Balagurchik was convinced that the equipment is a valuable asset to her and her staff.

Through the advisory group, the medical element literally has at its fingertips a concentration of the world's leading experts to assist in countering a chemical or biological attack.

While the use of such experts provides an immeasurable benefit to the medical element, Balagurchik is quick to point out the competency of her staff—17 corpsmen who were trained in the Medical Management of Chemical Casualties by the U.S. Army Medi-

everything—especially when the field is one which quickly changes and is not too often practiced, such as the treatment of chemical and biological contamination. As a result, we have tapped into those experts so that we may use their knowledge and experience to ensure that as many lives are saved as possible." □

—Story and photos by SGT Lance M. Bacon, USMC, Public Affairs, Marine Corps Base, Camp Lejeune, NC.

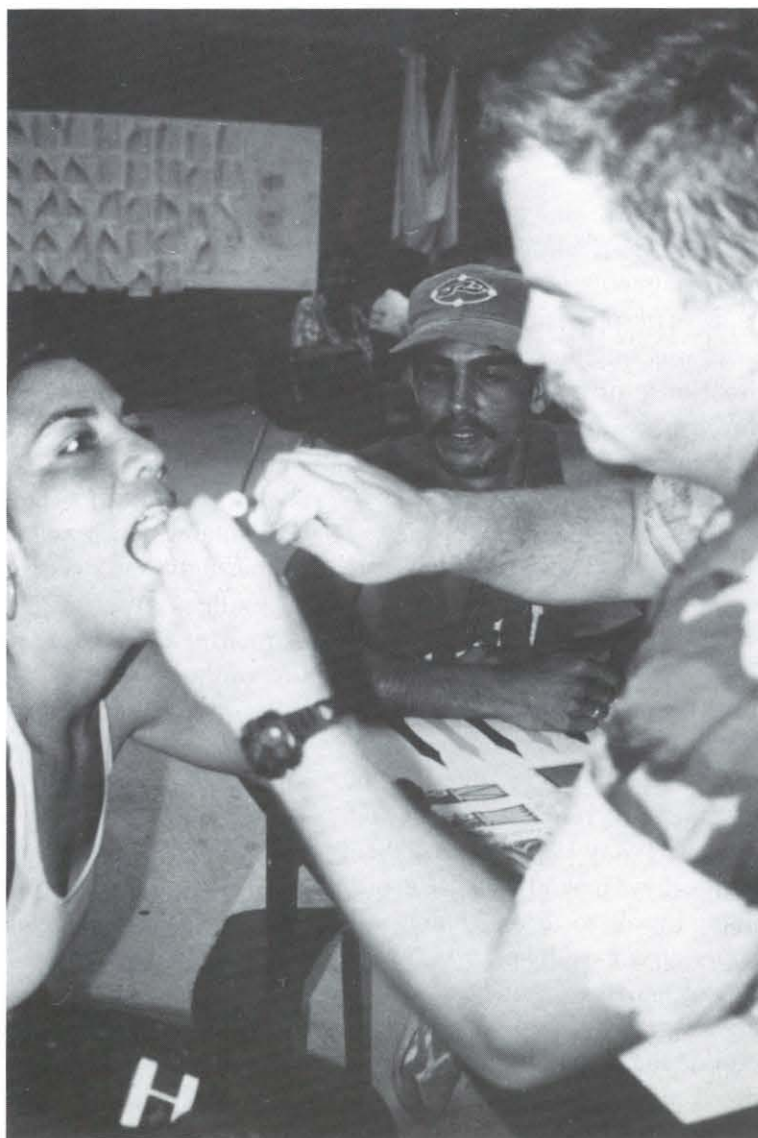
Out in the Camps: Dental Technicians Join the Triage Teams During Operation Sea Signal

CDR Kent G. Knudson, DC, USN
DT2 Shawn P. Rhodus, USN

Dental technicians (DTs) are required to identify and initially manage dental emergencies as basic criteria for graduation from "A" School, assignment to duty sections, and advancement in rate. During Operation Sea Signal, a mission of humanitarian assistance to Haitian and Cuban migrant refugees at Naval Station Guantanamo Bay, Cuba, the Joint Task Force 160 Medical Detachment (JTF 160 MED DET) Dental Department implemented a successful program centering on expanded duties of the DT in a triage setting.

Historically, JTF 160 was established on 18 May 1994 by U.S. Atlantic Command with responsibility for "reception, housing, subsistence, and medical care for migrants; ensuring a safe and orderly environment for migrants and U.S. Forces; assisting appropriate agencies to screen and process migrants for parole, repatriation and movement; and improving the quality of life for migrants." (1) At Operation Sea Signal's height in October 1994, over 50,000 migrants were on station. Dental care from Sea Signal's beginning to early July 1995 was provided by an amalgamation of dental personnel from Fleet Marine Force, Air Force, and Army stateside units. In this

DT3 S. Kirby inspects a patient's concern while the next patient "waits in the wings."



DT2 Shawn P. Rhodus

Right: Migrant village area, Camp Bulkeley. *Below:* An eager patient population. *Opposite page:* Partial overview of Camp Bulkeley migrant complex. Medical/dental complex is located at upper left.



humanitarian setting, dental treatment was enthusiastically embraced by the migrant population. In the early stages of the operation, the treatment focus was on emergent dental care situations, primarily extractions. However, as the mission length became undeterminable, despite some limited parole parameters, more comprehensive care was initiated.

After assumption of the health care mission on 30 June 1995 from the Air Force, the Navy staffed the MED DET with personnel attached to Jacksonville, 2nd Dental Battalion, Pensacola, and Norfolk dental commands. By this time, over 16,000 migrants still remained at GTMO. With the 2 May 1995 announcement by Attorney General Janet Reno providing parole to the remaining migrants on a case-by-case basis and the advent of the Cuban Migrant Lottery Program in August 1995 to determine the order of emptying individual migrant camps and paroling migrants to CONUS, a review of the

scope of dental care options was in order.

Providing expanded "comprehensive" dental care resulted in demand far exceeding the supply of manpower hours, equipment, and consumables operating out of temporary facilities 7 days a week. ADAL equipment alone had been in place for over a year; maintenance and repair were increasingly a concern. Access to appointments was inequitable at best and lent itself to migrant manipulation of the system.⁽²⁾ Appointment care was also at odds with heavy influxes of sick call patients sent through medical acute care clinics already established. A proposal to concentrate dental care efforts again on emergent dental care was approved as the emphasis on downsizing continued. The emergence of medical triage teams operating from the primary treatment facility provided the opportunity to better manage a heavy dental sick call load. The remedy? A senior dental technician was assigned



Courtesy Fleet Imaging Center, Guantanamo Bay, Cuba

to accompany the medical triage teams as they went daily into the migrant camps. One team covered Camp McCalla and its two remaining migrant villages until its closure in Sep-



tember 1995 and another covered the seven villages of Camp Bulkeley along the base Radio Range.

A typical day began at 0645 with the DT mustering with a team consisting of a physician's assistant/nurse, one or two independent duty corpsmen, a general duty corpsman, and three linguists for departure to the first camp. Following the triaging of the last camp, the DT returned to the clinic to assist in patient care. Once at the camp, he/she would identify a chief complaint and provide a cursory exam with a tongue blade or disposable mouth mirror and a penlight.

The priorities of care consisted of trauma, infection, and pain. The DTs were tasked to draw from their experience and training to focus on such things as intraoral/extraoral swelling, abnormal tissue appearances, gross decay, and partially erupted third molars. Should there be any doubt as to what clinical manifestations were apparent, the patient would be automatically sent for assessment by a

dental officer. The suspected problem would be noted and the patient given a pre-printed admission slip with the chief complaint clearly identified and the patient sent to the dental clinic. The patient would then be given a more definitive diagnosis by a dental officer and placed on standby for treatment.

By providing this "front line" service, the DT kept the input to the clinic focused on those patients who actually needed immediate attention rather than those whose perceived need did not meet criteria for access into the system. This allowed the DTs to utilize their rating training as well as maximizing providers' time by allowing the dental officer to remain chairside providing treatment. Periodically, a dental officer would accompany a DT to the camps for quality assessment/in-service purposes as well as to assess the program and needs for the specific migrant village. The DTs were instrumental in the efforts to refocus the dental mission

which eventually led to the downsizing of JTF 160 dental assets and personnel. This allowed retrofit of the dental operation upon appropriate migrant population levels and disestablishment of the field dental clinics to Branch Dental Clinic GTMO where the same program continued until the end of Operation Sea Signal with outstanding success. Utilization of the DTs was essential in managing dental care in this culturally diverse field environment.

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CDR Knudson served as Dental OIC and DT2 Rhodus served as Dental LPO in the latter phases of Operation Sea Signal. They are stationed at Naval Dental Center and Branch Dental Clinic NAS Cecil Field, Jacksonville, FL, respectively.

Implementation of a Base Closure Evaluation Tool to Monitor Inpatient Nursing Downsizing

LCDR Juanita A. Buda, NC, USN

Naval Medical Center (NMC) Oakland, CA, was identified for base closure by the 1993 Base Realignment and Closure (BRAC) Commission. The facility base closure date was set for 30 Sept 1996. Much research has been done addressing staffing theories and meth-

odologies, nurse staffing requirements under various constraining conditions, and the impacts of specific staffing strategies on cost, staff and patient satisfaction, and quality of care. However, less work has been done examining how to close a medical facility while maintaining proper staffing lev-

els. Based on advanced planning and decisions, NMC Oakland eventually faced the mandate of providing health care with a rather set number of staff. It was imperative through the closure process to plan for the impending changes in services and to monitor the status of base closure.

Table 1

Personnel Requirements-On Board Report

11-Jan-96

Skill	Position	JAN 95	FEB 95	MAR 95	APR 95	MAY 95	JUN 95	JUL 95	AUG 95	SEP 95	OCT 95	NOV 95	DEC 95	JAN 96	FEB 96	MAR 96	APR 96	MAY 96	JUN 96	JUL 96	AUG 96	SEP 96
Directorate: 05																						
0553210	6-NORTH (SURGICAL WARD)																					
Efficiency Review Requirement																						
2900	Nurse Corps Officer	13	13	13	13	13	13	7	7	7	7	7	7	7	7	7						
HME	Hospital Corps	18	18	18	18	18	17	9	9	9	9	9	9	9	9	9						
CK	Clerk	3	3	3	3	3	3	1	1	1	1	1	1	1	1	1						
Total Efficiency Review Requirement		34	34	34	34	34	33	17	17	17	17	17	17	17	17	17						
Officers On Board																						
0944	Staff Nurse	19	18	18	18	16	12	19	16	13												
2900	Nurse Corps Officer	1	1	1	1	1	1	1														
HME	Hospital Corps	14	14	12	12	12	11	15	14	11												
0610C 09	Registered Nurse							1	1	1	1	1	1	1	1	1						
0610C 11	Registered Nurse	1	1	1	1	1	1	1														
0620C 05	Vocational Nurse	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2						
0679C 04	Medical Clerk	2	2	2	2	1	1	2	2	2	2	2	1	1	1	1						
Total Officers On Board		39	38	36	36	33	28	42	35	29	5	5	4	4	4	4						
0553210 Excess or Deficit (-)		5	4	2	2	-1	-5	25	18	12	-12	-12	-13	-13	-13	-13						
05 Excess or Deficit (-)		5	4	2	2	-1	-5	25	18	12	-12	-12	-13	-13	-13	-13						

The primary mission of this base was to provide comprehensive health care to all eligible military beneficiaries. In April 1996 this mission ceased and the mission of base closure took priority. Prior to the actual closure, NMC Oakland underwent several phases of downsizing with associated levels of service and target population. While health care continued, an ongoing evaluation of workload and staffing was essential to ensure an adequate match between facility capacity and demand. As in many other health care facilities, nursing comprised a significant portion of the staff. The inpatient nursing unit served as the setting for the implementation of this evaluation tool project designed to monitor and evaluate nurse staffing and unit workload. It also provided a means to document the evaluation and intervention strategies applied to ensure adequate workload and staffing ratios throughout the closure of the inpatient nursing units. This in turn provided invaluable information for other nursing departments. In fact,

the strategies employed here are not only useful in a downsizing and closing environment, they can be used in an expanding environment.

Literature Review

As NMC Oakland faced downsizing and closure, nursing personnel had to be managed effectively to prevent both excess and shortage. Nurse workforce management generally consisted of staffing, scheduling, and allocation processes. Effective nurse staffing included the determination of:

- what constitutes an adequate level of patient care,
- the appropriate staffing mix,
- the breakdown of permanent versus temporary staff, and
- the capacities in which the nurse work force should be assigned to the various hospital wards.(1)

An appropriate match between staffing and workload is essential. Marquis and Huston, in their discus-

sion of nurse staffing and scheduling identify several benefits attained from ensuring a match between demand and capacity, including increased staff and patient safety and satisfaction, and improved quality of care.(2)

The closing of military hospitals is relatively new to military health care managers of this generation. A number of theories and models effective in the service industry have been applied to the health care setting to improve the precision of nursing resource utilization. Several authors convey the applicability of demand and capacity management strategies in the health care setting.(1,3) The characteristics of health care demand are described as variable and somewhat unpredictable in nature. Capacity drives, and can be driven by, demand in health care as demonstrated by the application of demand/capacity management concept of yield management in health care.(4) In yield management, a match is sought between demand and capacity in the service environment. Demand and

Table 2

Personnel Requirements-On Board Report

11-Jan-96

Skill	Position	JAN 95	FEB 95	MAR 95	APR 95	MAY 95	JUN 95	JUL 95	AUG 95	SEP 95	OCT 95	NOV 95	DEC 95	JAN 96	FEB 96	MAR 96	APR 96	MAY 96	JUN 96	JUL 96	AUG 96	SEP 96
Directorate: 05																						
0553220	6-VEST (SURG/ENT/DENT)																					
Efficiency Review Requirement																						
2900	Nurse Corps Officer	13	13	13	13	13	13	7	7	7	7	7	7	7	7	7						
HME	Hospital Corps	18	18	18	18	18	18	9	9	9	9	9	9	9	9	9						
CK	Clerk	3	3	3	3	3	3	1	1	1	1	1	1	1	1	1						
Total Efficiency Review Requirement		34	34	34	34	34	34	17	17	17	17	17	17	17	17	17						
Officers On Board																						
0944	Staff Nurse	18	17	17	17	16	13	17	13	10	15	13	11	8	8	8	6	4	3	3	2	2
2900	Nurse Corps Officer								1	1	1	1	1	1	1	1	1	1	1	1	1	1
2905	Nurse Corps Officer							1	1	1	1	1	1	1	1	1						
HME	Hospital Corps	17	15	15	17	17	15	12	13	11	16	13	10	9	9	9	1	1	1	1	1	1
0610C 09	Registered Nurse							1	1	1	1	1										
0610C 11	Registered Nurse	2	2	2	2	2	1															
0610C 12	Registered Nurse							1	1													
0620C 05	Vocational Nurse	3	3	3	3	3	3	1	1	1	1	1										
0679C 04	Medical Clerk	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
Total Officers On Board		41	38	38	40	39	33	34	32	26	36	31	24	20	20	20	8	6	5	5	4	4
0553220 Excess or Deficit (-)		7	4	4	6	5	-1	17	15	9	19	14	7	3	3	3	8	6	5	5	4	4
05 Excess or Deficit (-)		7	4	4	6	5	-1	17	15	9	19	14	7	3	3	3	8	6	5	5	4	4

supply factors can also be assessed in proposing a model for nursing human resource planning.(5) Variability in demand, a factor of nursing care requirements, determined by patient acuity levels and numbers of patients, is essential in the development of nursing staffing models.

A number of staffing models are based on patient care requirements quantified by patient classification systems. A direct relationship between staffing and the patient classification system will result in the closest match of nursing resources and actual patient care requirements.(6) Consideration of the source of nursing labor is essential in reducing cost while maintaining flexibility in meeting service

demands.(3) The source of nursing labor is considered in a staffing methodology in which interpretation of historical hospital data on workload and acuity is essential.(1) The seasonality of demand is taken into consideration in determining staffing requirements.

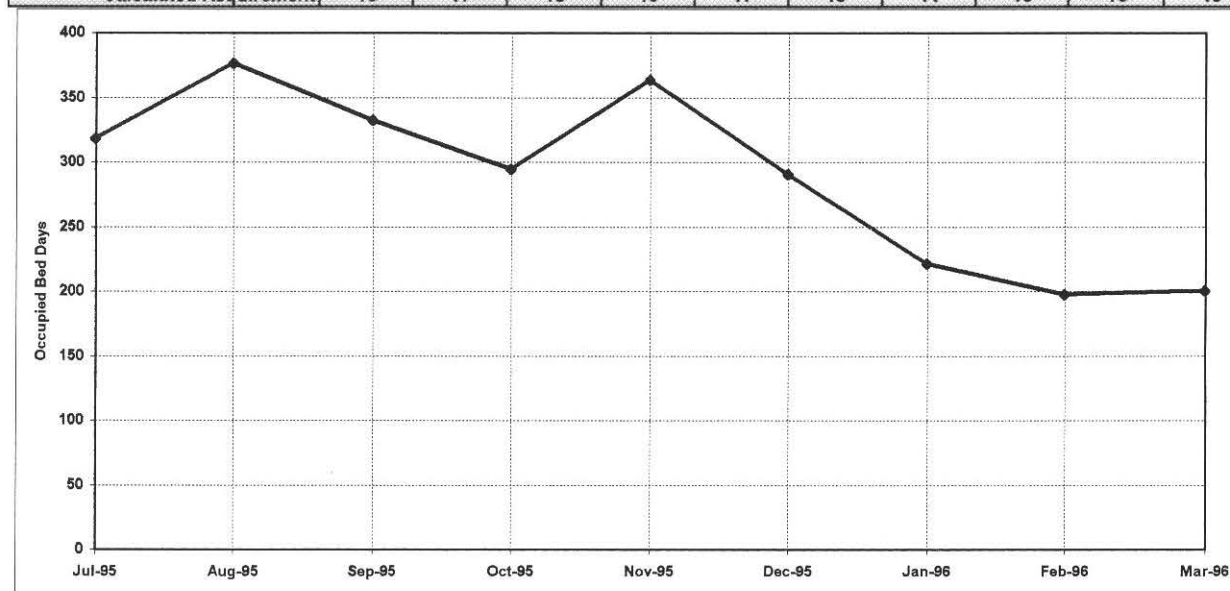
The Tool

A dynamic and flexible approach is essential in planning for the staffing requirements due to the numerous changes facing a closing facility. Adequate planning time and actual planning positively impacts the results of any organizational change.(7,8) Planning for nursing staff requirements in a closing facil-

ity is no exception. Staffing does not occur in a vacuum. Instead, numerous factors are considered including historical performance, future trends, and demands. A hospital closure documented through the reflections of a former nurse executive describes the sequence of service closure based on a priority rating system established by the hospital's corporate office.(9) Similar methods are used in the military facility in order to determine a closure sequence and timeline for health care services. Factors influencing service capabilities include target population size and age, health care services most frequently utilized by the target population, presence of disease (chronic or acute) in the target

Table 3

	Jul-95	Aug-95	Sep-95	Oct-95	Nov-95	Dec-95	Jan-96	Feb-96	Mar-96	Average
6-North Surgical Ward OBD	318	376	332	294	363	290	221	197	200	288
6-North Surgical (Capacity OBD)	639									
Excess Capacity	321	263	308	345	276	349	418	442	439	351
Average Excess Beds	11	9	10	11	9	11	14	15	14	12
Minimum Requirement										
Nurse	7	7	7	7	7	7	7	7	7	7
Corpsman	9	9	9	9	9	9	9	9	9	9
Clerical	1	1	1	1	1	1	1	1	1	1
Total Requirement	17	17	17	17	17	17	17	17	17	17
Calculated Requirement	16	17	16	15	17	15	14	13	13	15



population, and availability of support systems.

No single theory or staffing methodology adequately determines staffing requirements in health care. The literature review emphasizes a number of theories and methodologies in the models presented. Inpatient nursing staffing methodologies implemented in the closure of NMC Oakland were a combination of concepts and approaches. Staffing decisions were supported through the use of an acuity-based workload tool, the Workload Management System for Nursing (WMSN). The Office of the Assistant Secretary of Defense for Health Affairs (OASDHA) adopted WMSN as the basis for the Joint Ser-

vice Inpatient Nursing Standards in January 1988. The objective, standardized criteria in this tool provided nursing managers critical information for determining optimal staffing needs. The Department of Defense (DOD) Joint Healthcare Manpower Standard uses the efficiency review process to quantify manpower requirements for nursing and all other operational aspects of the command. The two methodologies are used together to evaluate the adequacy of staffing in nursing.

Tool Description

The goal was to implement an innovative evaluation tool to monitor the status of base closure specifically

related to staffing requirements and workload match on the inpatient nursing units. Designed in a data base format, this innovative tool would display a projection of individual unit workload, staffing, and recommended efficiency review staffing levels. By applying a proactive approach to the evaluation of closure, critical deficiencies or excesses can be identified in advance and resolved before a crisis results. Discrepancies between staffing requirements and workload could be anticipated and interventions implemented to avoid problems. Interventions proposed by the nursing department could include such actions as unit and staff consolidations, earlier transfer of nursing staff

Table 4

	Jul-95	Aug-95	Sep-95	Oct-95	Nov-95	Dec-95	Jan-96	Feb-96	Mar-96	Average-96
6-West Medical Ward OBD	106	125	111	98	121	97	74	66	67	
6-West Medical (Capacity OBD)	639									
Excess Capacity	533	514	529	541	518	542	565	574	572	543
Average Excess Beds	18	17	17	18	17	18	19	19	19	18
Minimum Requirement										
Nurse	7	7	7	7	7	7	7	7	7	7
Corpsman	9	9	9	9	9	9	9	9	9	9
Clerical	1	1	1	1	1	1	1	1	1	1
Total Requirement	17	17	17	17	17	17	17	17	17	17
Calculated Requirement	12	13	13	12	13	12	10	10	10	12

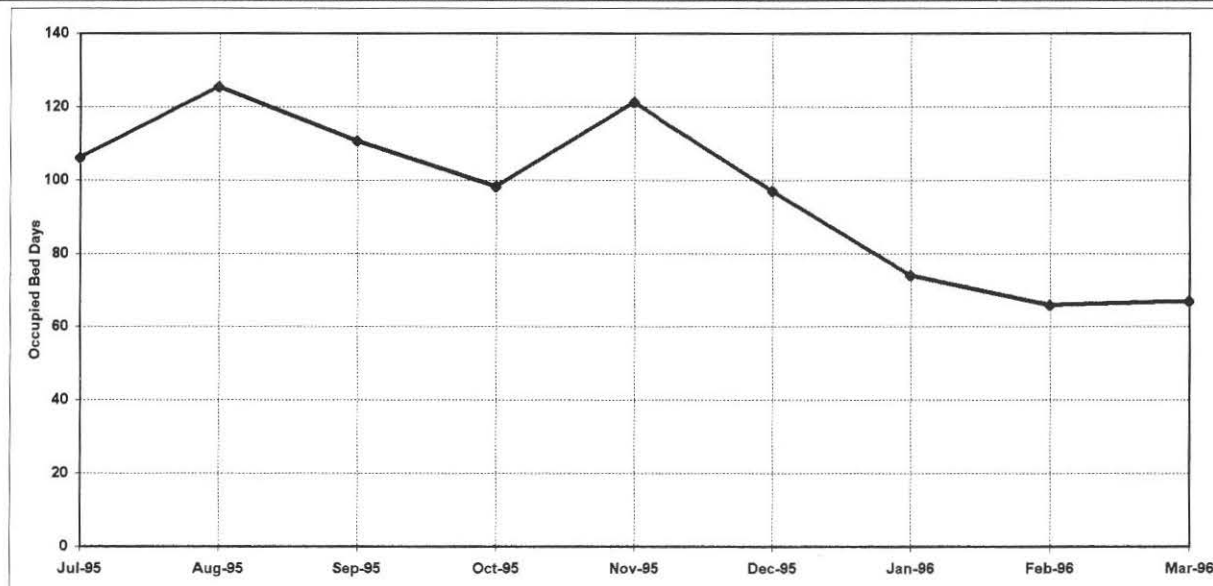
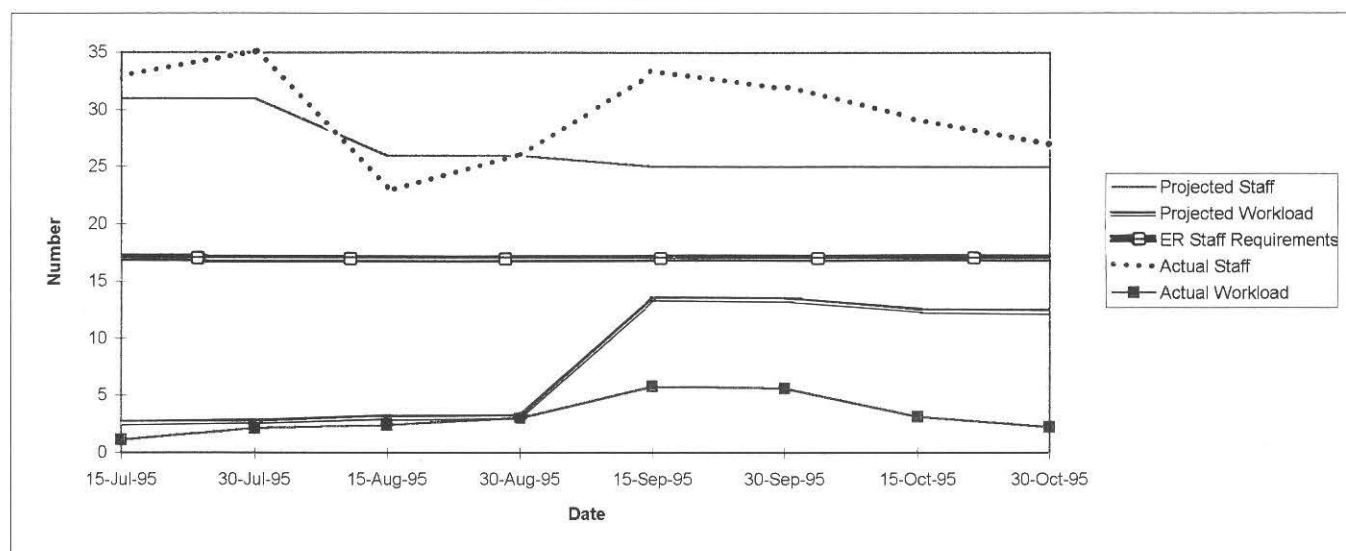


Table 5

6 West Medicine



	15-Jul-95	30-Jul-95	15-Aug-95	30-Aug-95	15-Sep-95	30-Sep-95	15-Oct-95	30-Oct-95
Projected Staff	31	31	26	26	25	25	25	25
Projected Workload	2.7	2.7	3.2	3.2	13.5	13.5	12.5	12.5
ER Staff Requirements	17	17	17	17	17	17	17	17
Actual Staff	33	35	23	26	33	32	29	27
Actual Workload	1.133333	2.125	2.4	3.0625	5.8	5.625	3.133333	2.25

to other duty stations, and transfer of staff to other departments within the command due to increasing closure-related workload. Since the original staffing plan called for staffing nursing services according to bed capacity versus projected acuity and workload, we anticipated that staffing would exceed workload requirements.

Project Description

This innovation project consisted of several key phases. These phases included tool development, implementation, data collection, and evaluation. Development of the evaluation tool incorporated a personnel data base identifying staff position, work location, and projected transfer date (Tables 1 and 2). Workload projec-

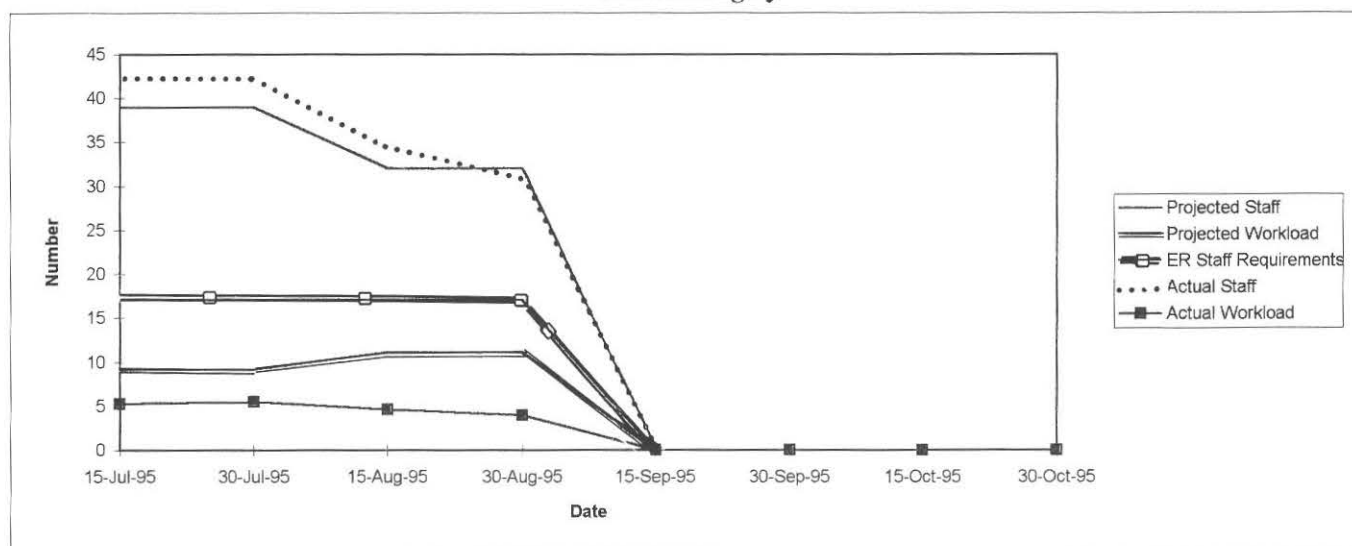
tions for the inpatient nursing units were based on statistical analysis of historical use, population size, and population characteristics (Tables 3 and 4). Staffing requirements for each unit incorporated efficiency review-based staffing recommendations as the minimum staffing level. Through graphical presentation, projected staffing, workload, and efficiency review-based staffing recommendations were plotted at 2-week time intervals and compared with actual staffing and workload figures (Tables 5 and 6). The tool implementation and data collection period started on 1 July 1995 and continued through 31 Oct 1995. Data collection was geared to the actual unit staffing and workload for this period. Efficiency review staffing requirements did not require re-

calculation based on actual workload data. Throughout the implementation and data collection period, evaluation of projected and actual staffing requirements and workload was done for the primary purpose of identifying critical staffing deficiencies or excesses.

Data Evaluation

Tool implementation, data collection, and comparison of that data to projections was an ongoing process. An understanding of the basis for initial and ongoing staffing decisions was required when evaluating data to identify reasons for the disparity in recommended versus actual staffing levels. Although that difference remained high throughout the data collection period, it is important to note

Table 6
6 North Surgery



	15-Jul-95	30-Jul-95	15-Aug-95	30-Aug-95	15-Sep-95	30-Sep-95	15-Oct-95	30-Oct-95
Projected Staff	39	39	32	32	0	0	0	0
Projected Workload	9.1	9.1	11.1	11.1	0	0	0	0
ER Staff Requirements	17	17	17	17	0	0	0	0
Actual Staff	42	42	34	31	0	0	0	0
Actual Workload	5.266667	5.5	4.6	3.9375	0	0	0	0

that significant staffing changes did occur. Workload, especially for the inpatient surgical unit, was consistently lower than projected, prompting a combination of the medical and surgical units in September 1995. Although still staffed to bed capacity, this combination resulted in the release of excess nursing staff to other commands and other departments in the hospital requiring additional staff. Evaluation of data was not modified. The tool was not designed and did not provide the means to determine reasons for the lower workload, although numerous reasons could be speculated without any foundation. The data analysis procedure was designed to graphically depict a comparison between what was projected and what happened to staffing and workload

during the 4-month period of implementation and data collection. These graphs are shown in Tables 5 and 6. The analysis procedure did not provide a means to identify causes for workload variance. Prior knowledge of the basis and methodology for staffing decisions helped to explain the staffing variances. The staffing did support the workload requirements for this closing facility. Modifications in unit structure and staffing occurred in order to achieve a closer match between staffing and workload requirements.

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When this article was written LCDR Buda was assigned to Naval Medical Center, Oakland, CA.

A Diagnosis of Scrub Typhus

LT Timothy S. Gormley, MC, USNR

Genetic predisposition to disease is often constant, while infectious and occupational factors can vary greatly in a deployed active duty population. Circumstances may demand differential diagnoses that, though appropriate, are rather different from those formulated in many CONUS training programs. Presented here is a case of scrub typhus which was admitted to a naval hospital in Japan. Despite an extensive inpatient evaluation and broad spectrum antibiotics, definitive diagnosis and an effective treatment plan remained elusive. Upon involvement of the battalion medical officer, who had more direct knowledge of the occupational environment and the medical hazards therein, diagnosis was made rapidly and appropriate treatment initiated.

The field environment of deployed sailors and marines is often very different from the urban setting of tertiary care medical centers and the population which may comprise many of their patients. This is especially true on foreign shores. This unavoidable problem is often exacerbated by geographically large referral patterns and the rotating nature of deployed units and physicians. Care of these patients is a challenge absent in civilian hospitals of similar size in CONUS.

To meet this challenge successfully, military medical centers must be familiar with the medical risks endemic to their referral patterns, communicate freely with the general medical officers who are familiar with the local environment, and formulate differential diagnoses influenced by

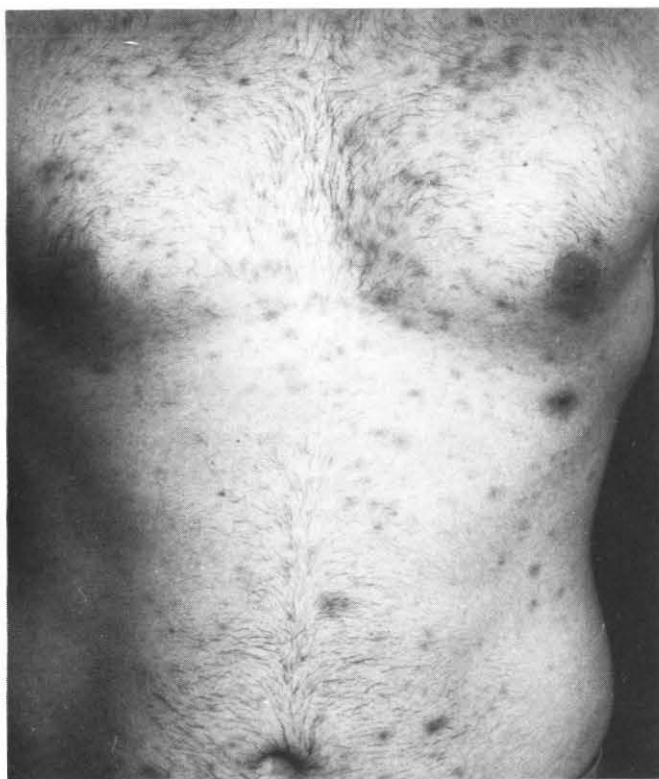
the risks specific to said environment.

Presented here is a case of a young marine who presented with a disease common to specific regions in Japan and at Mt. Fuji in particular. However, despite a comprehensive evaluation by several physicians in a tertiary care medical center, his diagnosis remained unclear. Only when his general medical officer evaluated the medical risks specific to his environment was the diagnosis made.

Case History

The patient was a 20-year-old previously healthy marine who was sent to his base clinic at Camp Fuji, Japan. He complained of fever, nausea, and anorexia over the previous day. Vital signs initially were HR=100, RR=20, B/P=160/78 with a temperature of 104.0 rectally. Physical examination at that time was normal. The patient was treated with fluid resuscitation and Tylenol, and monitored in the clinic over the next 12 hours. Re-evaluation the next morning noted a dry cough, myalgia, and similar vital signs despite Tylenol. The physical exam was notable for a 2/6 systolic ejection murmur and a maculopapular rash on the face and trunk. There was no adenopathy or meningeal signs noted. The patient was given 1 gm of IV ancef and referred to a tertiary care medical center for further diagnostic evaluation and treatment.

Evaluation in the emergency room further noted headache without photophobia and normal vital signs except systolic hypertension of 153 mm Hg. The physical exam described the above findings, in addition to tender adenopathy in the anterior cervical region. CBC was significant for a white count of 2.1 with 47 percent segs and a platelet count of 123. Blood electrolytes were within normal limits, as was erythrocyte sedimentation



Left: Maculopapular rash on trunk of patient. **Below:** A bite mark was noted in the right axillary region.



rate. Urinalysis had trace protein. Liver function tests were notable for a LDH of 1145 and an AST of 55. Chest X-ray was normal. Patient was diagnosed with neutropenic fever and admitted to the internal medicine service.

Further in-house evaluation included an anti-streptolysin -O titer and blood cultures. IV fluid and 250 mg of Augmentin po q8hrs was initiated. Differential diagnoses included a parvovirus B19 versus streptococcal infection/pharyngitis. Tylenol was ordered prn for fever. Over the next day, conjunctivitis with clear discharge and more pronounced adenopathy was noted, while fevers up to 101.0 persisted. Later, Augmentin was discontinued after blood cultures were negative for 48 hours. The presumptive diagnosis of erythema infectiosum was then made. Over the next 24 hours, the relative neutropenia corrected, but the LFTs remained persistently elevated and the

patient continued to have persistent although attenuated fever spikes. Possible hemolysis versus hepatitis was considered.

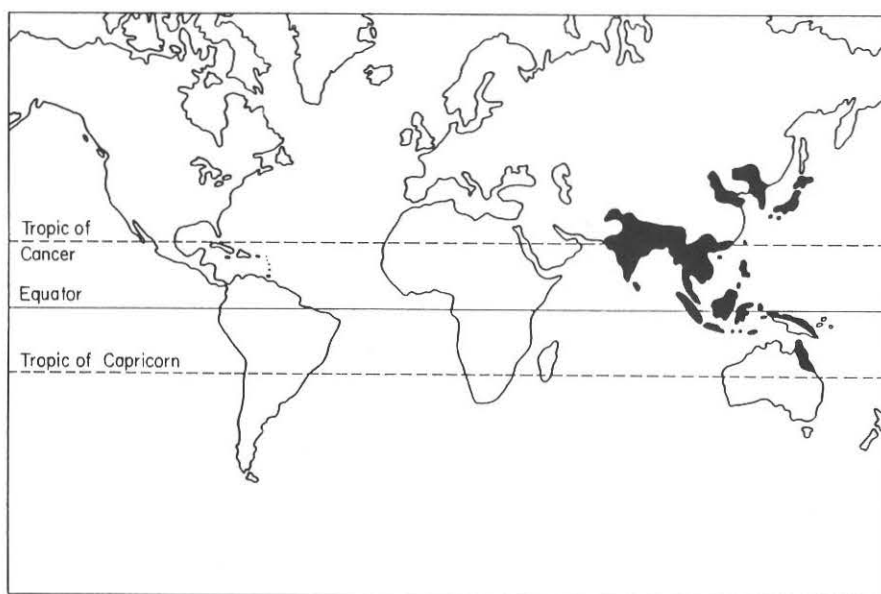
In the afternoon of the third hospital day, a call was received from the Mt. Fuji training area indicating the possibility of an infection by *Rickettsia tsutsugamushi*, scrub typhus. A similar case had presented to the marine's battalion surgeon the previous day. The patient was started on 100 mg of doxycycline po BID and had significant improvement of all signs and symptoms in 24 hours. A bite mark in the right axillary region was retrospectively noted. The patient went on to make a full recovery.

Discussion

Scrub typhus is known by various names, such as mite typhus, tsutsugamushi, shimamushi, Japanese river fever, and Kedani mite disease. The obligate intracellular bacterium *Rickettsia tsutsugamushi* is the etiologic

agent, of which three major serotypes exist (Karp, Gilliam, and Kato). A zoonotic disease, the organism is passed from rodents to man by the larval stage or "chigger" of trombiculid mites from the family *Leptotrombidium deliense*. One member of this family, *L. scutellare*, is responsible for an epidemiological variant known as winter scrub typhus or "shichito fever." The presentation of the disease is typically dramatic in a visiting nonindigenous population, and typically presents in 1 to 2 weeks of arrival.

Because of the high rate of transmission from rodent to chigger and given that most chiggers feed only once, areas of high focal infection rates are often found. These areas have four elements: (1) *R. tsutsugamushi*, (2) chiggers of the family *L. deliense*, (3) wild rats, and (4) transitional vegetation. Such areas are called *yudokuchi*, which is translated to mean "poisonous places." The Mt.



Fuji training area in Japan during October to November 1995 proved to be one such area for 3rd Battalion, 3rd Marines which was then UDP to that area. Six cases were documented within 3 weeks out of a total of over 800 marines and sailors, only a fraction of whom were in the field at any one time. The principal reservoir of *R. tsutsugamushi* is thought to be wild rats, especially *Rattus*. However, other small rodents and some birds may serve as vectors, i.e., field mice, shrews, etc. This noted combination of elements occurs in a wide geographical distribution in the far east (see map).

The bite of the infecting mite is usually unnoticed, but after an incubation period of about 10 days the site develops a small (<1cm) papule which subsequently enlarges and undergoes central necrosis and formation of eschar. Such eschar is found in 48 percent to 82 percent of patients, and several may be found simultaneously. There, the rickettsiae multiply and then disseminate. Concurrently, the patient suffers symptoms including severe headache, myalgia, anorexia, fever, and chills.

The rickettsiae tend to form lesions in vascular endothelium of such organs as the skin, heart, brain, and lungs. At these sites, a local infiltrate of monocytes, lymphocytes and plasma cells, and focal necrosis develops. As the disease progresses, the patient often develops diffuse, tender lymphadenopathy, photophobia, bronchitis, and cough. Approximately 1 week after the onset of symptoms, the patient then may develop a diffuse maculopapular rash, conjunctivitis, splenic enlargement, hepatomegaly, and leukopenia. Unchecked by antibiotic therapy, the disease may progress to deafness, anuria, pulmonary edema, or cardiac failure. More often, the disease is less severe and is commonly characterized by lysis of the fever and convalescence near the end of the second week. Although reports vary, the untreated mortality rate is often cited at between essentially zero and 30 percent.

Longer term complications of untreated scrub typhus can include spontaneous abortion in pregnant women, myocarditis, deafness, or persistent visual disturbances from enlarged blind spots, contraction of visual

fields, or scotomata. However, in the majority of cases, treated or untreated, it is characterized by complete recovery. Treatment does, however, reduce the mortality to nearly zero and immediately checks the progress of the disease. Treatment is with doxycycline or chloramphenicol. As immunity only develops in the second week of the disease, a subsequent dose of doxycycline at day 4 or 5 is advisable if treatment is begun in the first week, to eliminate the possibility of relapse. Immunity is limited to the particular strain of *R. tsutsugamushi* of prior infection for roughly 1 year, so multiple episodes are easily possible with multiple exposures. Chemoprophylaxis with weekly doses of 200 mg of doxycycline for individuals entering endemic areas is advisable.

Conclusion

The case presented here illustrates the importance of familiarity with local conditions and endemic disease which can greatly affect the likelihood of various items in a differential diagnosis and even its accuracy. The sequelae of this delay in diagnosis were inconsequential, but could have been more significant both to the patient and the training cycle of his unit. Rapid rotation of patients and medical personnel out of CONUS is a fact of life in military medicine. However, careful attention to the patient's site-specific history and epidemiology will be of even more importance in the care of the forward deployed by a smaller naval or triservice Medical Corps.

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Dr. Gormley is Battalion Surgeon, 3rd Battalion, 3rd Marines, MCBH, Kaneohe Bay, HI.

Naval Medical Information Management Center Highlights

●Defense Medical Logistics Standard Support (DMLSS)

DMLSS supports the major logistics functions of Medical Material Management, Biomedical Maintenance, Property Management and Technology Management, and Medical Facilities Management. Seventeen DMLSS site surveys have been completed in preparation for deployment of Forward Customer Support (FCS). Through an accelerated schedule, the DMLSS deployment team has deployed FCS to seven major medical treatment facilities (MTFs). FCS is scheduled to deploy to six other MTFs during this fiscal year.

●Centralized Credentials Quality Assurance System (CCQAS)

CCQAS significantly improves readiness in the Military Health Services System (MHSS) by providing timely access to the credentials of roughly 200,000 privileged providers, including all uniformed components and DOD civilians. CCQAS ensures current accountability in credentials management throughout the MHSS and increases preparedness for deployment. Moreover, it makes accurate provider information available to leaders and planners at all levels of command, including service headquarters, intermediate commands, lead agents, and both operational and peacetime medical treatment facilities. This information tool will empower TRICARE agencies to maximally utilize provider resources.

A Windows-based version of CCQAS has been deployed. Five medical readiness training fields were

developed to track certification of medical readiness training for individually privileged health care providers. The specific fields associated with medical readiness training include the date initial medical readiness training was completed, the current mobilization platform unit identification code (UIC), the date current mobilization platform UIC was verified, the mobilization practice specialty, and the date of the current commander's verification of Sustained Medical Readiness training. These fields will permit processing of Interfacility Credentials Transfer Briefs for all providers assigned to a particular readiness platform.

The OASDHA memorandum, "Policy Guidelines for Medical Staff Appointment and Privileges in DoD," dated 28 June 1995, implemented a uniform taxonomy and policies for appointing and privileging across the services, eliminating several barriers to interservice provider sharing.

Completion of programming with final acceptance testing occurred in April. Most of the functionality originally envisioned for CCQAS is complete. Key functions such as batch processing, flagging screen for expiring licenses, and American Hospital Association Guide, have been delayed for future release. The lack of these functions, though not optimal, will not detract from the significant advantages and support to be gained when CCQAS is deployed.

Contractor provided training via video, classroom, user's guide, or any combination of the three, will be made available to all 454 planned user sites at deployment.

In Memoriam

RADM Walter M. Loneragan, MC (Ret.), an OB-GYN who rose from seaman apprentice to rear admiral and delivered Lynda Bird Johnson Robb's two eldest daughters, died 23 Sept 1996. He was 74.

Dr. Loneragan was born in Boston, MA, on 29 Jan 1922. He attended undergraduate school at Tufts College, Medford, MA, as a premedical student for 3 years before enlisting in the Navy Hospital Corps in 1944. He served at Oak Knoll Naval Hospital, CA, rising to pharmacist's mate third class. After the war he attended the University of Buffalo School of Medicine, Buffalo, NY, graduating in 1948. He interned at E.J. Meyer Memorial Hospital in Buffalo and was a resident in obstetrics and gynecology at the Sisters of Charity Hospital in Buffalo.

Dr. Loneragan was commissioned on 18 June 1951 in the Navy Medical Corps. His first assignment was on the OB-GYN staff at Naval Hospital Great Lakes, IL, followed by duty at U.S. Naval Hospital Naples, Italy. Subsequent assignments included assistant chief of OB-GYN at Naval Hospital Corona, CA, and chief of OB-GYN at Naval Hospital Camp Pendleton, CA, and National Naval Medical Center, Bethesda, MD. RADM Loneragan also served with the First Marine Division and



at the Bureau of Medicine and Surgery, Washington, DC. In July 1970 he became executive officer of Naval Hospital Portsmouth, VA, and in April 1972 became deputy director of Naval Regional Medical Center, Portsmouth, VA. He then was commanding officer of the Naval Regional Medical Center, Charleston, SC, from July 1972 to July 1975, and served as Inspector General, Medical from July 1975 until July 1977. At that time, RADM Loneragan

became commanding officer of the Naval Regional Medical Center, Oakland, CA. In this capacity, he had returned to command the hospital he had served in as a corpsman 30 years before.

Dr. Loneragan was a diplomate of the American Board of Obstetrics and Gynecology and served as consultant in that specialty to the Surgeon General from 1966 to 1970. He held positions as associate clinical professor of OB-GYN at Georgetown Medical School and the Medical University of South Carolina.

Dr. Loneragan's military awards include the Meritorious Service Medal, Navy Commendation Medal, American Campaign Medal, Good Conduct Medal, World War II Victory Medal, and National Defense Service Medal. □

AFIP Seeks Collaborators for Aerospace and/or Hyperbaric Environmental Research

The Armed Forces Institute of Pathology (AFIP) is seeking collaborators in research related to the aerospace environment and/or the hyperbaric environment (either diving or clinically related). Research questions related to readiness and casualty evacuation are preferred.

The AFIP is located on the grounds of Walter Reed Army Medical Center, Washington, DC. AFIP's Division of Altitude and Hyperbaric Physiology, Department of

Scientific Laboratories, is dedicated to enhancing the scientific understanding of the effects of oxygen on biological systems at high and low atmospheric pressures.

The Division of Altitude and Hyperbaric Physiology is staffed by three experienced Ph.D. officers and five aerospace physiology technicians. The Division has four laboratories: a hyperbaric (dive) chamber laboratory, a

hypobaric (altitude) chamber laboratory, a molecular biology laboratory, and a tissue culture laboratory. Completed research includes the following:

(1) In the study "Visual Performance with Aviator Night Vision Imaging System (ANVIS at High Altitude (4300 meters)," test subjects demonstrated no impairment in visual acuity or contrast sensitivity when using night vision goggles in two different simulated night sky conditions. There was a significant difference in the pO₂ levels of males vs. females.

(2) "Combined Effects of Hyperbaric Oxygen and Antimicrobials in a Mouse Model of Gas Gangrene" demonstrated that either clindamycin or metronidazole significantly prolonged survival of Clostridium-infected mice more than penicillin, imipenem, or sham treatment. The addition of hyperbaric oxygen treatments did not significantly affect survival.

(3) Hyperbaric oxygenation was found to potentiate the in vitro killing effects of amphotericin B against Leishmania promastigotes in the study entitled "Augmented Oxygen-Dependent Killing of Leishmania."

One current protocol involves examining the effects of spaceflight on muscle cell growth in vitro. Changes in cellular morphology were observed after cells were flown aboard the space shuttle. In addition, these cells failed to fuse to form myofibers. In another current protocol, a new model soft tissue radionecrosis is being developed. This model will be used to evaluate the efficacy of hyperbaric oxygen therapy in treatment.

Those interested in collaborative research efforts related to the aerospace or hyperbaric environments should contact CAPT David Kulesh, Ph.D., USAF, at DSN 662-2652, Commercial 202-782-2652, or E-mail <kulesh@email.afip02.osd.mil>.

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Naval Medical Research and Development Command Highlights

● Naval Biodynamics Laboratory Closes

In a formal ceremony recognizing 26 years of service the Naval Biodynamics Laboratory (NBDL) was decommissioned and the facilities transferred to the University of New Orleans (UNO). The laboratory became the National Biodynamics Laboratory (NBDL) under the management of the UNO College of Engineering. The Naval Biodynamics Laboratory, located in NASA's Michoud Assembly Facility, was identified for closure under the Base Realignment and Closure Act in 1995. Since 1971, the laboratory has served as an important Navy activity conducting biomedical research on the effects of mechanical forces (motion, vibration, and impact) encountered by naval personnel on ships and in aircraft. Researchers established human tolerance limits for naval platforms and developed preventive and therapeutic countermeasures for personnel to maintain optimal performance. The laboratory houses several unique "man-rated" test devices and facilities to support the research programs. Major devices include a 700-foot horizontal accelerator, a 36-foot vertical accelerator, and a ship motion simulator capable of Sea State 5. The significant benefits of the transfer of NBDL to UNO include the enhancement of biomedical research capabilities through collaborative work between UNO and the Louisiana State University Medical Center, continued employment opportunities for staff members with the new NBDL, continued analysis of the extensive research data bases, and access of the unique research testing devices by DOD.

● VANGUARD 96—A Great Success

VANGUARD 96, sponsored by the Naval Medical Research and Development Command and the Naval War College was the first medical science and technology initiatives game of its kind. The game brought together members of the medical, the line, and the science and technology communities to focus on future naval capabilities in the year 2015 and beyond. Game players were divided into four focus areas (NBC/infectious diseases, combat casualty care, military operational medicine with an emphasis on the environmental aspects, and military operational medicine with an emphasis on the human performance aspects) and tasked,

as members of a Joint Task Force, to conduct a mission analysis and develop concepts of operations for two scenarios (a lesser regional contingency in the Middle East and an operation other than war involving a major earthquake in the Java Sea off Indonesia). VANGUARD 96 accomplished the major objectives of the game which included investigating wargaming's role in the medical requirements identification process, increasing the operational planner's sensitivity to medical support as a force multiplier, identifying emergent medical technologies that will enhance fleet capabilities, and recommending approaches for improving involvement of industry and academia. VANGUARD 96 and future VANGUARD games will be valuable as tools for Navy medicine to envision and plan for the future.

● Human Factors Model for Aviation Mishaps

The Naval Safety Center looks at safety information to discern mishap indicators. These indicators highlight conditions that have the potential to result in an aviation mishap. Human factors has been identified in 80 percent of aviation mishaps. A team of naval aerospace psychologists, working with the Naval Safety Center, developed a human factors model to investigate prevention techniques and performance enhancements to deter aviation mishaps. The model was applied to the Safety Center's data bases which include findings and recommendations from Mishap/Hazard Reports, comparative studies, and specific issue analysis (e.g., F-14 mishap study). The model represents the relationship between personnel conditions (i.e., improper flight scheduling, self-medicating, exceeding crew rest) and preflight factors. The application of this model allows for the development of effective intervention methods. Proactive use of intervention strategies will enhance combat readiness through the preservation of personnel and equipment.

For more information on these and other research efforts contact Doris M. Ryan, Deputy Director, External Relations, at DSN 295-0815, Commercial 301-295-0815, FAX 301-295-4033, or E-mail ryand@mail-gw.nmrhc.nnmc.navy.mil.

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